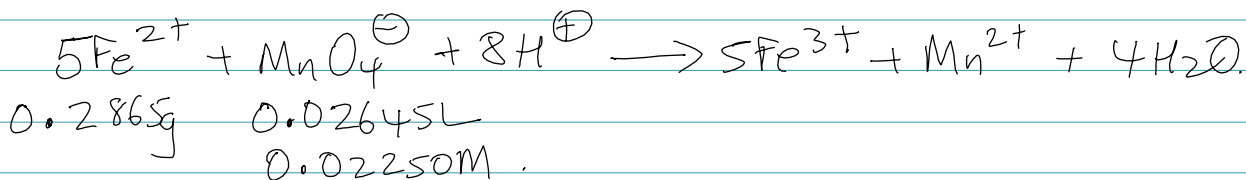


redox. Solution Stoichiometry - redox titration + titration (5)

① A 0.2865g sample of  $\text{Fe}^{2+}$  ore is dissolved in acid and converted to  $\text{Fe}^{3+}$  by titrating with 0.02645L of 0.02250M  $\text{KMnO}_4$ . what is the mass % of  $\text{Fe}^{2+}$  in the ore?



strategy mol  $\text{KMnO}_4 \rightarrow$  mol  $\text{MnO}_4^- \rightarrow$  mol  $\text{Fe}^{2+} \rightarrow$  mass  $\text{Fe}^{2+} \rightarrow$  mass %

$$1 \text{ mol } \cancel{\text{KMnO}_4} \times \frac{1 \text{ mol } \text{MnO}_4^-}{1 \text{ mol } \cancel{\text{KMnO}_4}} \times 0.02645 \text{ L} \times 0.02250 \text{ mol } \cancel{\text{MnO}_4^-} \times \frac{5 \text{ mol } \text{Fe}^{2+}}{1 \text{ mol } \cancel{\text{MnO}_4^-}}$$

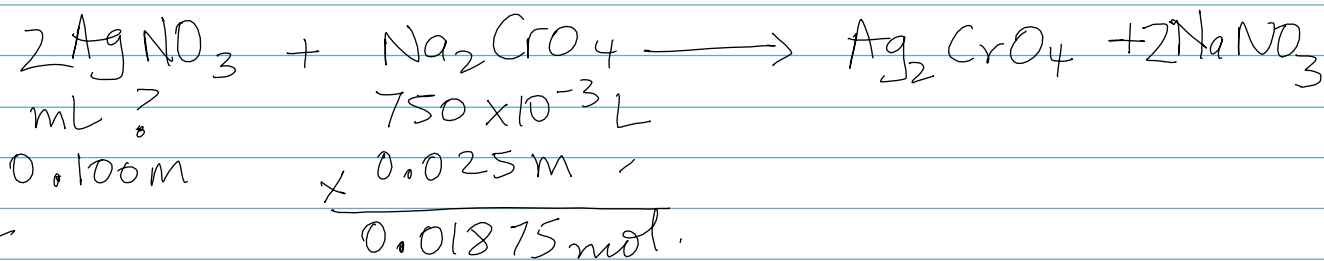
(PT)

$$\times \frac{55.847 \text{ g}}{\text{mol } \text{Fe}^{2+}} = 0.1662 \text{ g Fe in ore}$$

$$\frac{0.1662 \text{ g Fe}}{0.2865 \text{ g ore}} \times 100\% = \boxed{58.01\% \text{ Fe}}$$

ppt titration

② How many mL of 0.100 M  $\text{AgNO}_3$  are required to react with 750 mL of 0.0250 M  $\text{Na}_2\text{CrO}_4$ ?



$$M = \frac{\text{mol}}{\text{L}}$$

$$\text{mol} = M \times L$$

$$0.01875 \text{ mol } \cancel{\text{Na}_2\text{CrO}_4} \times \frac{2 \text{ mol } \text{AgNO}_3}{1 \text{ mol } \cancel{\text{Na}_2\text{CrO}_4}} \times \frac{1 \text{ L} \times 1000 \text{ mL}}{0.100 \text{ mol } \text{AgNO}_3 \text{ L}}$$

$= \boxed{375 \text{ mL}}$